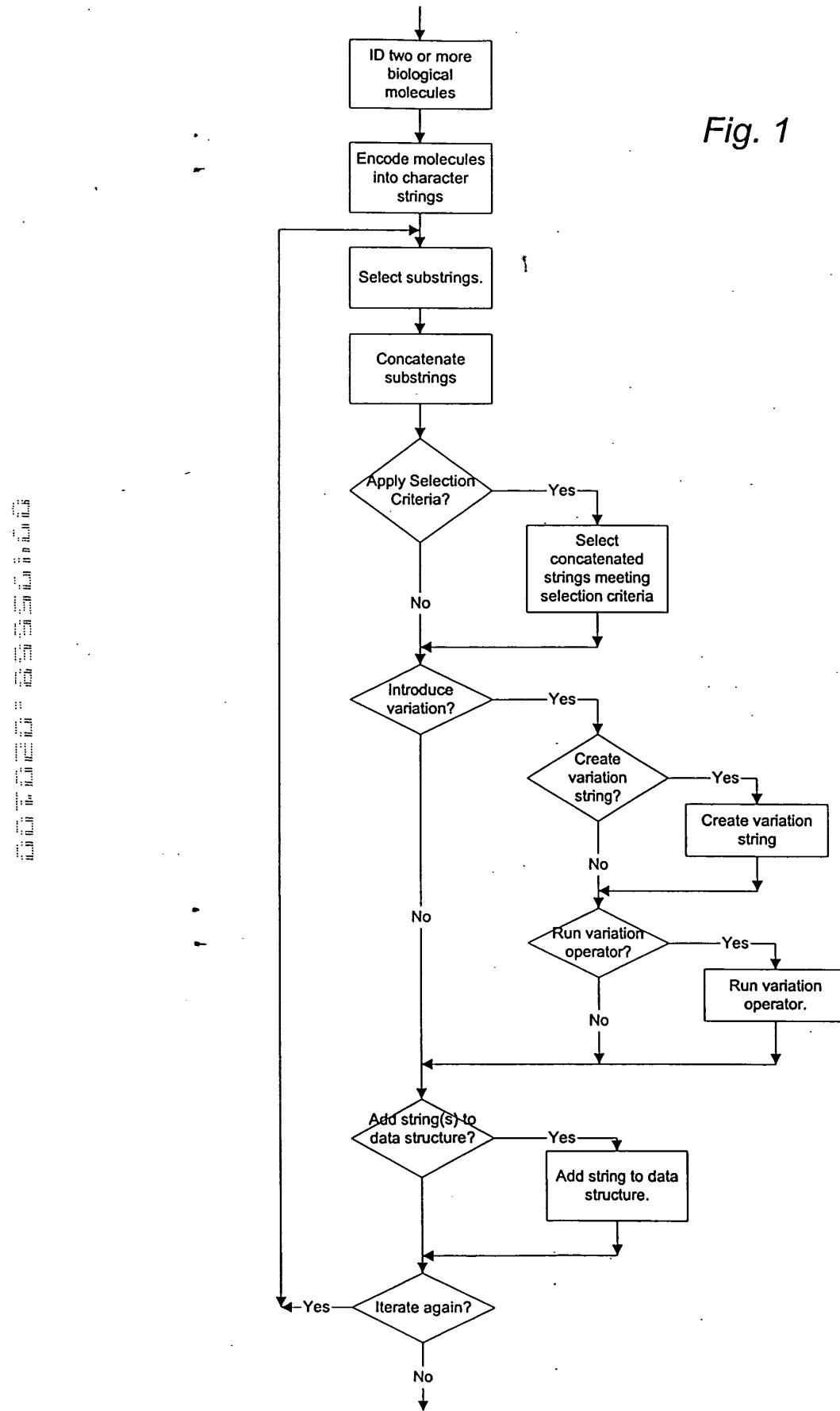


Fig. 1



3271.002US0

Initial strings A, B, and C:

**String A:** A1 - A2 - A3 - A4 - A5  
**String B:** B1 - B2 - B3 - B4 - B5  
**String C:** C1 - C2 - C3 - C4 - C5

↓ Select substrings

String Pools:

**Pool 1:** A1, B1, C1  
**Pool 2:** A2, B2, C2  
**Pool 3:** A3, B3, C3

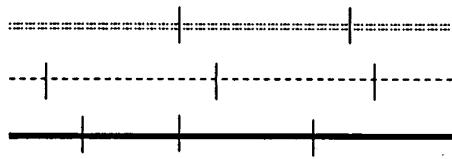
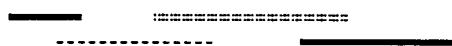
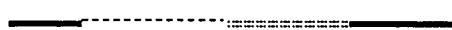
↓ Concatenate substrings

New Strings:

**String A:** A1 - B2 - B3 - C4 - A5  
**String B:** B1 - C2 - C3 - B4 - B5  
**String C:** C1 - A2 - A3 - A4 - C5

*Fig. 2*

3271.002WO0

**Initial sequences****Subsequences aligned  
by similarity****Concatenated  
subsequences***Fig. 3*

3271.002WO0

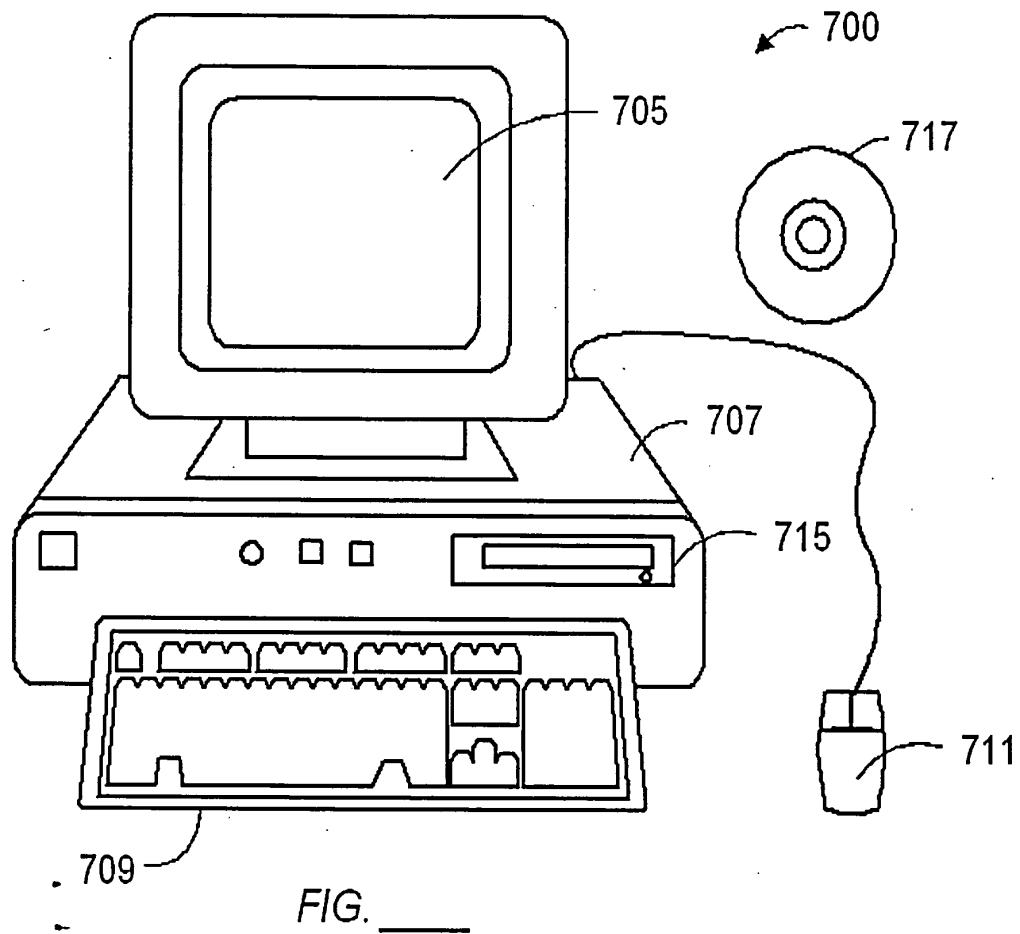


Fig. 4

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Fig. 5

FAMILY GAGGS MODEL # 1.

SUBTILISIN BACKGROUND INFORMATION:

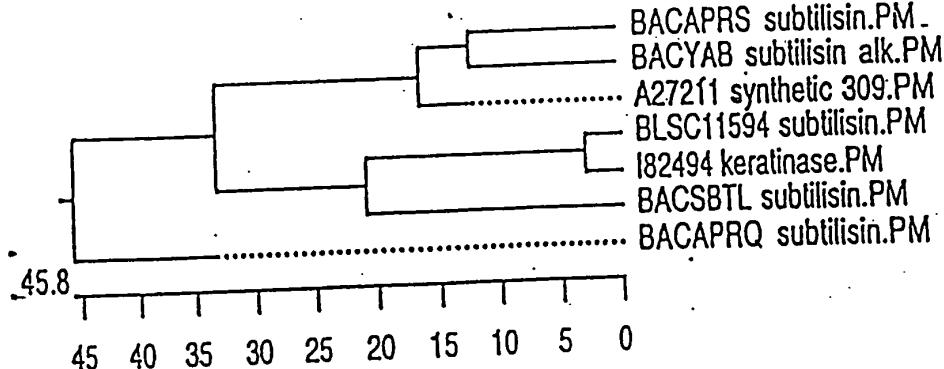
7 PARENTS, SERINE PROTEASES, DIVERSE

TYPE OF ALIGNMENT/SIMILARITY DATA PRESENTED:  
AMINOACID SEQUENCES, LEADER PEPTIDE EXCLUDED.

Percent Similarity

	1	2	3	4	5	6	7	
1	62.1	81.4	57.6	81.8	56.1	59.1	1	
2	50.5	61.0	54.9	59.5	58.2	60.8	2	
3	21.0	52.0	54.6	78.4	50.6	53.2	3	
4	54.4	63.3	62.3	52.0	64.6	67.9	4	
5	20.5	54.9	25.1	65.6	53.9	56.5	5	
6	58.6	56.6	72.2	44.2	63.4	94.9	6	
7	52.5	51.4	66.0	38.5	57.8	4.9	7	
	1	2	3	4	5	6	7	

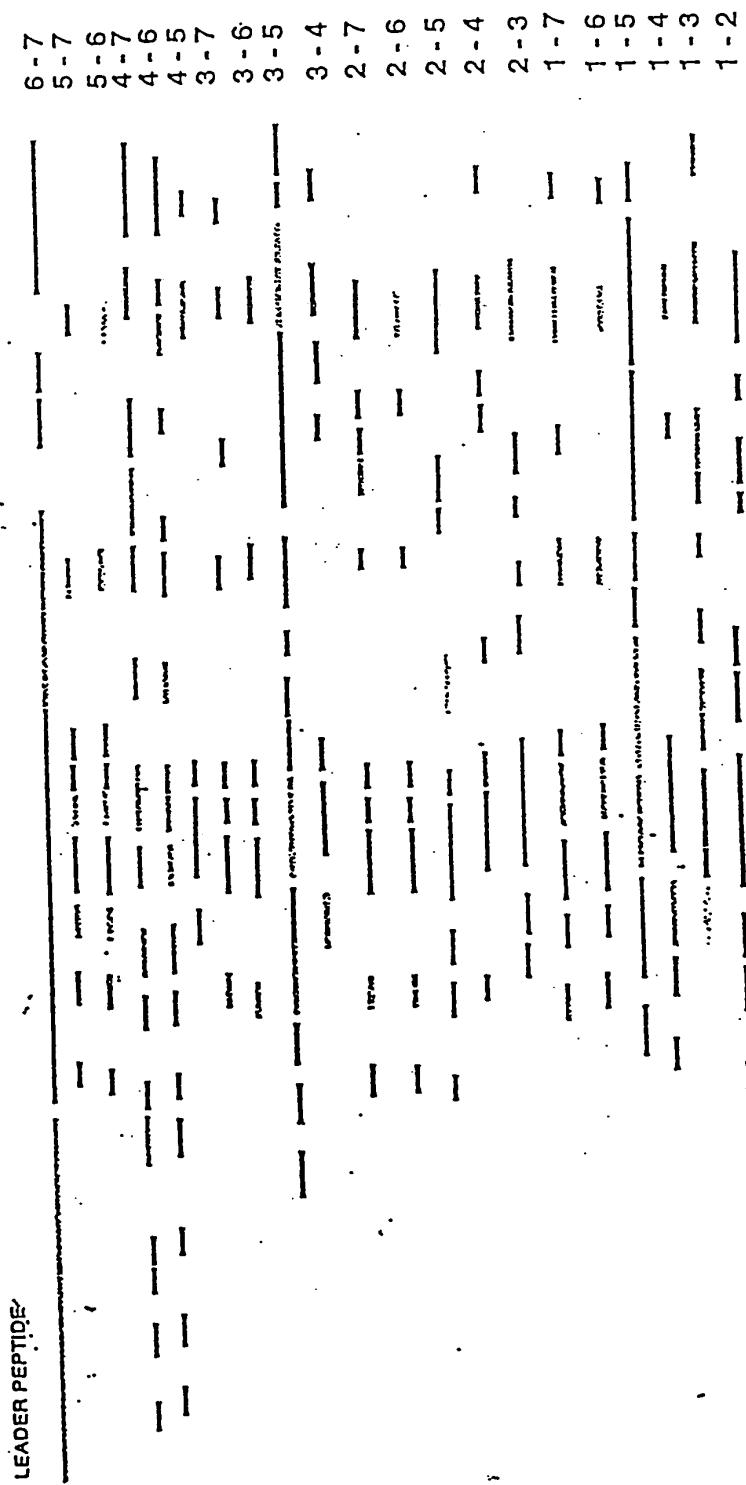
A27211 synthetic 309.PM  
BACAPRQ subtilisin.PM  
BACAPRS subtilisin.PM  
BACSBTL subtilisin.PM  
BACYAB subtilisin alk.PM  
BLSC11594 subtilisin.PM  
I82494 keratinase.PM



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Fig. 6

## FAMILY GAGGS: SUBTILISIN MODEL: PAIRWISE DOT-PLOT ALIGNMENTS TO FIND HOMOLOGY AREAS



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Fig. 7

GAGGS-SUBTILLISIN MODEL (7 PARENTS)  
SELECTING PAIRWISE Crossover POINTS

